

REMARKS

The Office action dated June 26, 2003 and the cited references have been carefully considered.

Status of the Claims

Claims 1-29 are pending. Claims 22-29 are canceled pursuant to an election made on June 3, 2003 by the Applicant's attorney to prosecute claims 1-21. The Applicant reserves the right to file one or more divisional patent applications at an appropriate future date. Claims 30-41 are new and recite patentable subject matter already disclosed in the specification. Therefore, claims 1-21 and 30-41 remain in the current prosecution.

Claims 1-9 and 11-13 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 4,877,920 to Lush *et al.* (hereinafter "Lush"). Claim 6 is rejected under 35 U.S.C. § 112, second paragraph. Claim 10 is rejected under 35 U.S.C. § 103(a) over Lush. Claims 14-15 are rejected under 35 U.S.C. § 103(a) over Lush in view of U.S. Patent 6,475,386 to Carr *et al.* (hereinafter "Carr"). Claims 16-21 are rejected under 35 U.S.C. § 103(a) over alleged prior art in view of Lush. Applicant respectfully traverses all of the rejections for the reasons set forth below.

Claim Rejection Under 35 U.S.C. § 112, Second Paragraph

Claim 6 is rejected under 35 U.S.C. § 112, second paragraph. Specifically, the Examiner stated that "[i]t is unclear whether 'said metal' as recited in claim 6 refers to the metal selected from the group consisting of iron, copper, and aluminum, or combinations thereof, or to the 'heavy metal'." Claim 6 is amended to clarify that "said metal" refers to iron (II) and aluminum,

or combinations thereof. Therefore, amended claim 6 now overcomes the rejection and is in condition for allowance. Early allowance of this claim is respectfully requested.

Claim Rejection Under 35 U.S.C. § 102(b)

Claims 1-9 and 11-13 are rejected under 35 U.S.C. § 102(b) as being anticipated by Lush. Applicant respectfully traverses this rejection because Lush does not disclose a carbon adsorbent capable of interacting with anions of heavy metal.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a *single* prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987) (emphasis added). "The identical invention must be shown in as complete detail as is contained in the . . . claim." *Richardson v. Suzuki Motor Co.*, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989).

The present invention provides an adsorbent to lower concentrations of heavy metal from a medium. That adsorbent contains a carbon having at least one oxygen-containing compound of a heavy metal incorporated therein, wherein the metal is iron, copper, aluminum or a combination thereof. The adsorbent is capable of interacting with anions of the heavy metal thereby lowering its concentration in the medium.

By contrast, Lush discloses a process for removing arsine impurities in process streams, but only for the removal of arsine (AsH_3) or lower hydrocarbyl arsines ($\text{R}_x\text{AsH}_{3-x}$) from hydrocarbon fluids and inert gases using CuO-containing activated carbon. Column 1, lines 56. Arsine and hydrocarbyl arsines do not exist as anions of arsenic in reducing media such as hydrocarbon fluids (e.g, propylene; column 2, line 32) or inert gases (e.g, nitrogen; column 2, line 29).

In contradistinction, claims 1-9 and 11-13 recite an activated carbon in which one of iron (II), aluminum, and combinations thereof are incorporated and which is capable of removing heavy metal anions to a lower concentration. Accordingly, because Lush does not disclose each and every element of each of claims 1-9 and 11-13, Lush does not anticipate these claims.

Claim Rejections Under 35 U.S.C. § 103(a)

Claim 10 is rejected under 35 U.S.C. § 103(a) over Lush. Applicant respectfully traverses this rejection because Lush does not teach or suggest a method for making a carbon adsorbent for removing heavy metal anions from medium using a carbon adsorbent capable of interacting with anions of heavy metal.

"[T]he legal conclusion of obviousness [under 35 U.S.C. § 103(a)] requires that there be some suggestion, motivation, or teaching in the prior art whereby the person of ordinary skill would have selected the components that the inventor selected and used them to make the new device." *C.R. Bard, Inc. v. M3 Systems, Inc.*, 48 U.S.P.Q.2d 1225, 1231 (Fed. Cir. 1998). Thus, in order for the prior art to render the claimed invention obvious, all of the elements thereof must be taught or suggested in the prior art. "What must be found obvious to defeat the patentability of the claimed invention is the claimed combination." *The Gillette Co. v. S.C. Johnson & Son, Inc.*, 16 U.S.P.Q.2d 1923, 1927 (Fed. Cir. 1990). "To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." "All words in a claim must be considered in judging the patentability of that claim against the prior art." MPEP § 2143.03 (8th ed., Rev. 1, Aug. 2001).

Lush teaches only the removal of arsine (AsH_3) or lower hydrocarbyl arsines ($\text{R}_x\text{AsH}_{3-x}$) from hydrocarbon fluids and inert gases using CuO-containing activated carbon. Lush does not

teach or suggest a method of making his CuO-containing carbon, let alone all of the elements of the method of claim 10. In fact, Lush simply could not teach or suggest a method for making a carbon adsorbent for removing heavy metal anions because Lush's arsine or hydrocarbyl arsines are not capable of existing as arsenic anions in hydrocarbon fluids or inert gases.

In contradistinction, claim 10 recites a method of making a carbon that has at least one of iron (II), aluminum, and combinations thereof incorporated therein and that is capable of removing anions of heavy metals. Because Lush does not teach all of the elements of claim 10 or suggest how a person of ordinary skill in the art would have selected the elements, Lush cannot obviate claim 10.

Claims 14 and 15 are rejected under 35 U.S.C. § 103(a) over Lush in view of Carr. Applicant respectfully traverses this rejection because a combination of Lush and Carr does not teach or suggest all of the elements of each of claim 14 and 15.

"To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." MPEP § 2143.03 (8th ed., Rev. 1, Aug. 2001).

As pointed out above, Lush does not teach or suggest a method of making a carbon adsorbent that has at least one of iron (II), aluminum, and combinations thereof incorporated therein and that is capable of removing heavy metal anions. Adding Carr to show an activated carbon made from nut shell still does not show all of the elements of each of claims 14 and 15. Because a combination of Lush and Carr does not teach or suggest all of the elements of each of claims 14 and 15, these claims are not rendered obvious over Lush in view of Carr.

Claims 16-21 are rejected under 35 U.S.C. § 103(a) over alleged admitted prior art in view of Lush. The Applicants respectfully traverses this rejection because a combination of the

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disclosed prior art and Lush does not teach or suggest combining all of the elements of each of claims 16-21.

"To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." MPEP § 2143.03 (8th ed., Rev. 1, Aug. 2001).

Lush does not even teach a method of making his carbon, let alone a method with all of the elements of claims 16-21. Moreover, none of the disclosed references teaches or suggests a method of making carbons, wherein a carbonaceous raw material and a compound of iron (II) aluminum, or combinations thereof are pulverized to form a powdered mixture before a metal-containing carbon particulate is produced, as is recited in claims 16-21. Therefore, a combination of Lush and any of the disclosed references still does not teach or suggest all of the elements of each of claims 16-21. Because a combination of Lush and the disclosed references does not teach or suggest all of the elements of each of claims 16-21, these claims are not rendered obvious over Lush in view of the disclosed references.

The Examiner stated that "it appears that the recited method of making an activated carbon is old." The Applicant respectfully traverses this statement because it is not sufficient under 35 U.S.C. § 103(a) to allege that some of the elements of a claim may be known. Instead, the Examiner must specifically point to a combination of references that teaches or suggests all of the elements of the claim. *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 221 U.S.P.Q. 481, 488 (Fed. Cir. 1984) ("The invention must be considered as a whole, and the question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination.")

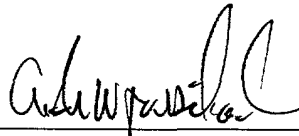
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In view of the above, Applicant respectfully submits that the patent application and the claims, as amended, therein are in a condition for allowance. Accordingly, reconsideration of all rejections is respectfully requested. Allowance of claims at an early date is solicited.

Applicant would appreciate the courtesy of a telephone call should the Examiner have any questions or comments with respect to this response or the claim language for purposes of efficiently resolving same.

Respectfully submitted,

By



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